



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>B65D 33/25</b>	<b>A1</b>	(11) International Publication Number: <b>WO 98/05567</b>
		(43) International Publication Date: 12 February 1998 (12.02.98)

(21) International Application Number: PCT/US97/13845

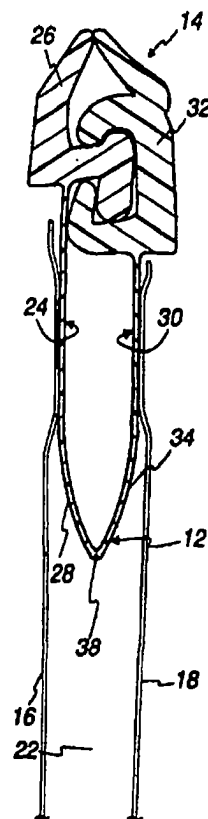
(22) International Filing Date: 6 August 1997 (06.08.97)

(30) Priority Data:  
08/694,093 7 August 1996 (07.08.96) US(71) Applicant: TENNECO PACKAGING INC. [US/US]; 1163  
Pittsford-Victor Road, Pittsford, NY 14534 (US).(72) Inventors: ST. PHILLIPS, Eric, A.; 24 Timber Lane, Fairport,  
NY 14450 (US). THOMAS, Toby, R.; 8 Kurt Road,  
Pittsford, NY 14534 (US). PROVAN, Alex, R.; 6 Arlington  
Park, Canandaigua, NY 14424 (US).(74) Agent: BLANKSTEIN, Michael, J.; Arnold, White & Durkee,  
P.O. Box 4433, Houston, TX 77210 (US).(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR,  
BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE,  
HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,  
LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT,  
RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG,  
UZ, VN, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG,  
ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ,  
TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR,  
GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF,  
BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).**Published***With international search report.**Before the expiration of the time limit for amending the  
claims and to be republished in the event of the receipt of  
amendments.*

(54) Title: RECLOSABLE PACKAGE WITH TAMPER EVIDENT FEATURE

## (57) Abstract

A reclosable package comprises opposing wall panels (16, 18) and a reclosable seal (14). The opposing wall panels are joined on three sides such as to create a receptacle space having a mouth at one end. The reclosable seal (14) extends along the one end and includes a first track and a second track. The first track includes a first reclosable element (26) and a first fin (28) portion extending downward from the first reclosable element (26) toward the receptacle space (22). The first track is joined to one of the wall panels. The second track includes a second reclosable element (32) and a second fin (34) portion extending downward from the second reclosable element toward the receptacle space. The second track is joined to the other of the wall panels. The first (26) and second (32) reclosable elements are releasably engageable to each other. In one embodiment, the first and second fin portions are joined to each other along a one-time breakable preferential area of weakness to prevent tampering with the package prior to being opened. In another embodiment, the mouth end is pleated and forms a one-time breakable preferential area of weakness.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

## RECLOSABLE PACKAGE WITH TAMPER EVIDENT FEATURE

**FIELD OF THE INVENTION**

The present invention relates generally to the packaging industry. More particularly, the invention relates to a reclosable package having a tamper evident feature.

**BACKGROUND OF THE INVENTION**

5        Reclosable packages are very common, especially in the food industry. Such packages are typically made to be reclosable via the use of a reclosable feature such as a resealable adhesive seal or a reclosable zipper. Such zippers can be opened and closed either by pressure or by the use of an auxiliary slider mechanism.

      Reclosable packages are a great convenience to the consumer especially for  
10    products such as luncheon meats and cheeses where, typically, only a portion of the product is used at any given time. A problem with these reclosable packages, however, is that the reclosable features do not provide a leak proof barrier. Thus, the contents of the package can leak out of the package and the external atmosphere can leak into the package, promoting food spoilage. Another problem with reclosable  
15    packages is that such packages can be easily tampered with prior to purchase by the consumer.

      A need therefore exists for packages having a leak and tamper proof seal in addition to having a reclosable feature. It would be especially advantageous to place such a leak and tamper proof seal below the reclosable feature (closer to the food

**SUBSTITUTE SHEET (RULE 26)**

product) such that the tamper proof seal would not in any way interfere with the operation of the reclosable feature.

### **SUMMARY OF THE INVENTION**

The present invention is directed to a reclosable package having a tamper  
5 evident seal located below the reclosable feature of the package.

In one embodiment, a reclosable package comprises opposing wall panels and a reclosable seal. The opposing wall panels are joined on three sides such as to create a receptacle space having a mouth at one end. The reclosable seal extends along the one end and including a first track and a second track. The first track includes a first  
10 reclosable element and a first fin portion extending downward from the first reclosable element toward the receptacle space. The first reclosable element or the first fin portion is coupled to one of the wall panels. The second track includes a second reclosable element and a second fin portion extending downward from the second reclosable element toward the receptacle space. The second reclosable  
15 element or the second fin portion is coupled to the other of the wall panels. The first and second reclosable elements are releasably engageable to each other. The first and second fin portions are joined to each other along a one-time breakable preferential area of weakness to prevent tampering with the package prior to being opened. The first and second fin portions may be coextruded as a single continuous fin or may be  
20 separately extruded and then later connected to each other.

In another embodiment, a reclosable package comprises opposing wall panels and a reclosable seal. The opposing wall panels are sealed on four sides with at least

**SUBSTITUTE SHEET (RULE 28)**

one of the four sides being pleated. The pleated side forms a one-time breakable preferential area of weakness. The reclosable seal extends along the pleated side and includes a first track and a second track. The first track includes a first reclosable element and a first fin portion extending downward from the first reclosable element.

5 The first fin portion is connected to one of the wall panels. The second track includes a second reclosable element and a second fin portion extending downward from the second reclosable element. The second fin portion is connected to the other of the wall panels. The first and second reclosable elements are releasably engageable to each other. The first and second fin portions may be coextruded with the respective

10 wall panels or may be separately extruded from the respective wall panels and then later connected thereto.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings in

15 which:

FIG. 1 is a section view of a mouth portion of a reclosable package having a tamper proof feature formed by joined fin portions located below a reclosable zipper arrangement;

FIG. 2 is a perspective view of the reclosable package incorporating the mouth

20 portion depicted in FIG. 1 in which a reclosable zipper having a slider mechanism is opened and the tamper proof feature formed by joined fins is partially opened;

**SUBSTITUTE SHEET (RULE 20)**

4

FIG. 3 is a section view of a mouth portion of a reclosable package having modified tamper proof feature formed by joined fin portions located below a reclosable zipper arrangement;

FIG. 4 is a section view of a mouth portion of an alternative reclosable package having a tamper proof feature formed by a pleated side located below a reclosable zipper arrangement;

FIG. 5 is a perspective view of the reclosable package incorporating the mouth portion depicted in FIG. 4 in which a reclosable zipper having a slider mechanism is opened and the tamper proof feature formed by the pleated side is partially opened;

and

FIG. 6 is a section view of a mouth portion of a reclosable packaging having a modified tamper proof feature formed by a pleated side located below a reclosable zipper arrangement.

While the invention will be described in connection with certain preferred embodiments, it is not intended to limit the invention to the specific exemplary embodiments. On the contrary, it is intended to cover all alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

#### **DESCRIPTION OF THE PREFERRED EMBODIMENTS**

Turning now to the drawings, FIG. 1 depicts a mouth portion of a reclosable package having a tamper evident feature 12 located below a reclosable closure arrangement 14. FIG. 2 shows the reclosable package 10 incorporating the mouth

**SUBSTITUTE SHEET (RULE 26)**

portion depicted in FIG. 1. The mouth portion of the reclosable package 10 includes a pair of opposing wall panels 16 and 18 of polymeric film which make up a package body 20 and define a receptacle space 22. Connected to the wall panel 16 is a first track 24 having a first profile 26 and a first fin portion 28 extending downward from the first profile 26. Connected to the other wall panel 18 is a second track 30 having a second profile 32 and a second fin portion 34 extending downward from the second profile 32. The first and second profiles 26 and 32 are releasably engageable with each other to provide a reclosable seal to the package. In the illustrated embodiment, the lower edges of the first and second fin portions 28 and 34 are joined to each other along a one-time breakable preferential area of weakness or preferential tear area 38 to form a one-time openable tamper evident feature. The joined first and second fin portions 28 and 34 have a generally U-shaped or V-shaped cross-sectional configuration.

To join the first and second fin portions 28 and 34, the first and second fin portions 28 and 34 may be coextruded as a single continuous fin having the preferential area of weakness 38. In one embodiment, the preferential area of weakness 38 takes the form of a perforated line, score line, or thinned line. A score line is created by making a uniform crease at the intersection of the fin portions 28 and 34. A thinned line is created by coextruding the fin portions 28 and 34 with less plastic material along the region joining the lower edges of the fin portions 28 and 34. In another embodiment, the preferential area of weakness 38 results from forming the single continuous fin out of highly oriented plastic that has a tendency to split along the preferential area of weakness 38.

**SUBSTITUTE SHEET (RULE 20)**

Instead of coextruding the first and second fin portions 28 and 34 as a single continuous fin, the first and second fin portions 28 and 34 may be separately extruded and then later weakly attached at their lower edges or some other location by heat sealing, welding, or the like. The weak attachment of the first and second fin portions 28 and 34 creates the preferential area of weakness 38.

The reclosable package 10 further has an auxiliary slider mechanism 36 (FIG. 2) slidably mounted to the closure arrangement 14 for movement between a closed position and an open position. The first and second profiles 26 and 32 are engaged to each other while the slider mechanism 36 is in the closed position, and movement of the slider mechanism 36 from the closed position to the open position disengages the profiles 26 and 32 from each other. The composition and manner of operation of this zipper and slider arrangement is described in detail in U.S. Patent No. 5,067,208 to Herrington, Jr. et. al., which is incorporated herein by reference in its entirety.

As illustrated in FIG. 2, in order to open the reclosable package of the instant invention, the consumer grips the slider mechanism 36 and moves it such that the closure profiles 26 and 32 of the respective first and second tracks 24 and 30 are detached from each other. Next, the consumer tears open the tamper evident feature along the preferential area of weakness 38 joining the lower edges of the first and second fin portions 28 and 34. The package can be resealed utilizing the reclosable closure arrangement 14 and slider mechanism 36. Specifically, the consumer grips the slider mechanism 36 and moves it from the open position to the closed position so as to engage the complementary closure profiles 26 and 32.

**SUBSTITUTE SHEET (RULE 28)**



In an alternative embodiment depicted in FIG. 3, where like reference numerals are used to designate analogous parts, the first wall panel 16 is integrally formed with an upper edge of the closure profile 26 such that the outer surface of the first fin portion 28 need not be connected to the first wall panel 16. Likewise, the second wall panel 18 is integrally formed with an upper edge of the closure profile 32 such that the outer surface of the second fin portion 28 need not be connected to the second wall panel 18.

FIGS. 4 and 5 show an alternative embodiment of the instant invention.

FIG. 4 shows a section view of a mouth portion of a reclosable package 40 depicted in FIG. 5. The reclosable package 40 includes a tamper evident feature 42 located below a reclosable closure arrangement 44. The reclosable package 40 includes a pair of opposing wall panels 46 and 48 of polymeric film which make a package body 50 and define a receptacle space 52. The mouth end of the package 40 where the opposing wall panels 46 and 48 are sealed to each other is pleated. The pleat, which has a generally M-shaped cross-sectional configuration, forms the tamper proof feature 42 located below the reclosable closure arrangement 44. More specifically, the center region of the pleat is a one-time breakable preferential area of weakness 70.

Connected to the wall panel 46 is a first track 56 having a first profile 58 and a first fin portion 60 extending downward from the first profile 58. Connected to the other wall panel 48 is a second track 62 having a second profile 64 and a second fin portion 66 extending downward from the second profile 64. The first and second profiles 58 and 64 are releasably engageable with each other to provide a reclosable seal to the package.

**SUBSTITUTE SHEET (RULE 28)**

The reclosable package 40 further has an auxiliary slider mechanism 68. As illustrated in FIG. 5, in order to open the reclosable package 40, the consumer grips the slider mechanism 68 and moves it from a closed position to an open position so as to disengage the closure profiles 58 and 64 from each other. Next, the consumer tears  
5 open the tamper evident feature along the preferential area of weakness 70, which may take any of the forms described in connection with FIGS. 1 and 2. The package can be resealed utilizing the reclosable closure arrangement 44 and slider mechanism 68. Specifically, the consumer grips the slider mechanism 68 and moves it from the open position to the closed position so as to engage the complementary closure profiles 58  
10 and 64.

In an alternative embodiment depicted in FIG. 6, where like reference numerals are used to designate analogous parts, the first and second fin portions 60 and 66 are coextruded with the respective wall panels 46 and 48.

FIGS. 1-6 depict alternative embodiments of packages having both a tamper  
15 evident feature as well as a reclosable closure arrangement. The tamper evident feature not only provides a consumer with the assurance that his or her newly purchased package has never been opened before, but also provides a very good initial seal which preserves the freshness of the food contents of the package prior to its initial opening. Since the reclosable closure arrangement is located above the tamper  
20 evident feature, the operation of the reclosable closure arrangement is not hampered by the presence of the tamper evident feature.

The interlocking profiles, tracks, fin portions, and optional slider mechanism are optimally made from polyethylene, polypropylene, or copolymers of polyethylene

**SUBSTITUTE SHEET (RULE 20)**

or polypropylene. Especially preferred components are low density polyethylene (LDPE) and LDPE/polypropylene mixtures.

The opposing films making up the opposing wall panels of the polymeric package typically are made of polyethylene, polypropylene, polyester, copolyester or  
5 mixtures of those compositions. Furthermore, the polymeric packages of the present invention can have multiple layers joined by coextrusion. Thus, one skilled in the art can design and coextrude multi-layered polymeric bags which will incorporate the various properties inherent in differing polyethylene and polypropylene compositions. It is further possible to incorporate pigments, metallic components, paper, and/or  
10 paper/plastic composites into or on the layer or layers of the polymeric bags of the instant invention.

The components of the reclosable closure arrangement such as the tracks having integrally formed interlocking profiles and fin portions may be attached to the package films making up the wall panels of the package by the processes of either heat  
15 sealing or welding. The process utilized depends upon the materials from which the bag and closure arrangements are made. Specifically, heat sealing is a process whereby similar polymeric-based materials are fused or melted together. Welding is a process where an intermediate third material such as an adhesive is utilized to "glue" dissimilar polymeric-based materials to each other.

20 Alternatively, an adhesive seal may be utilized as the reclosable feature of the instant invention. Such seals employ a resealable adhesive-type substance which is applied to either one or both of the films making up the polymeric package. Alternatively, the adhesive is applied to an intermediary base strip.

**SUBSTITUTE SHEET (RULE 20)**

While the present invention has been described with reference to one or more particular embodiments, those skilled in the art will recognize that many changes may be made thereto without departing from the spirit and scope of the present invention. Each of these embodiments and obvious variations thereof is contemplated as falling

5 within the spirit and scope of the claimed invention, which is set forth in the following claims.

**SUBSTITUTE SHEET (RULE 28)**

**WHAT IS CLAIMED IS:**

1. A reclosable package comprising:  
opposing wall panels joined on three sides such as to create a receptacle space  
having a mouth at one end; and  
5 a reclosable seal extending along said one end and including a first track and a  
second track, said first track including a first reclosable element and a first fin portion  
extending downward from said first reclosable element toward said receptacle space,  
said second track including a second reclosable element and a second fin portion  
extending downward from said second reclosable element toward said receptacle  
10 space, said first and second reclosable elements being releasably engageable to each  
other, said first and second fin portions being joined to each other along a one-time  
breakable preferential area of weakness to prevent tampering with said package prior  
to being opened.
2. The reclosable package of claim 1, wherein said first and second fin  
15 portions are joined to each other along respective lower edges thereof.
3. The reclosable package of claim 1, wherein said first and second fin  
portions are coextruded with each other so as to form a single continuous fin.
4. The reclosable package of claim 1, wherein said first and second fin  
portions are separately extruded and then later attached to each other.

**SUBSTITUTE SHEET (RULE 28)**

5. The reclosable package of claim 1, wherein a combination of said first and second fin portions has a generally U-shaped or V-shaped cross-sectional configuration.

6. The reclosable package of claim 1, wherein said first fin portion is  
5 attached to an inner surface of said one of said walls and said second fin portion is attached to an inner surface of said other of said walls.

7. The reclosable package of claim 1, wherein said preferential area of weakness is selected from the group consisting of a series of perforations, a score line, a thinned line, and a highly oriented region.

10 8. The reclosable package of claim 1, wherein said first reclosable element is a first profile and said second reclosable element is a second profile, and further including a slider mechanism slidably mounted to said first and second profiles for movement between a closed position and an open position, said first and second profiles being engaged to each other while said slider mechanism is in said closed  
15 position, said first and second profiles being disengaged from each other in response to movement of said slider mechanism to said open position.

9. The reclosable package of claim 1, wherein said first fin portion is directly connected to one of said wall panels and said second fin portion is directly connected to the other of said wall panels.

**SUBSTITUTE SHEET (RULE 26)**

10. The reclosable package of claim 1, wherein said first reclosable element is directly connected to one of said wall panels and said second reclosable element is directly connected to the other of said wall panels.

11. A reclosable package comprising:

5 opposing wall panels sealed on four sides, at least one of said four sides being pleated, said pleated side forming a one-time breakable preferential area of weakness; and

a reclosable seal extending along said pleated side and including a first track and a second track, said first track including a first reclosable element and a first fin  
10 portion extending downward from said first reclosable element, said first fin portion being joined to one of said wall panels, said second track including a second reclosable element and a second fin portion extending downward from said second reclosable element, said second fin portion being joined to the other of said wall panels, said first and second reclosable elements being releasably engageable to each  
15 other.

12. The reclosable package of claim 11, wherein said first reclosable element is a first profile and said second reclosable element is a second profile.

13. The reclosable package of claim 11, wherein said pleated side has a generally M-shaped cross-sectional configuration.

**SUBSTITUTE SHEET (RULE 26)**

14. The reclosable package of claim 11, wherein said first fin portion is attached to an outer surface of said one of said wall panels, and said second fin portion is attached to an outer surface of said other of said wall panels.

15. The reclosable package of claim 11, wherein said pleated side includes  
5 a first inner panel joined to an upper edge of said one of said wall panels and a second inner panel joined to an upper edge of said other of said wall panels, said first and second inner panels having respective lower edges joined to each other along a line of weakness.

16. The reclosable package of claim 15, wherein said preferential area of  
10 weakness is selected from the group consisting of perforations, a score line, a thinned line, and a highly oriented region.

17. The reclosable package of claim 15, wherein said first fin portion is attached to an outer surface of said one of said wall panels, and said second fin portion is attached to an outer surface of said other of said wall panels.

15 18. The reclosable package of claim 17, wherein said first and second inner panels are disposed between said wall panels.

19. The reclosable package of claim 12, further including a slider mechanism is slidably mounted to said first and second profiles for movement between a closed position and an open position, said first and second profiles being  
20 engaged to each other while said slider mechanism is in said closed position, said first

**SUBSTITUTE SHEET (RULE 28)**



and second profiles being disengaged from each other in response to movement of said slider mechanism to said open position.

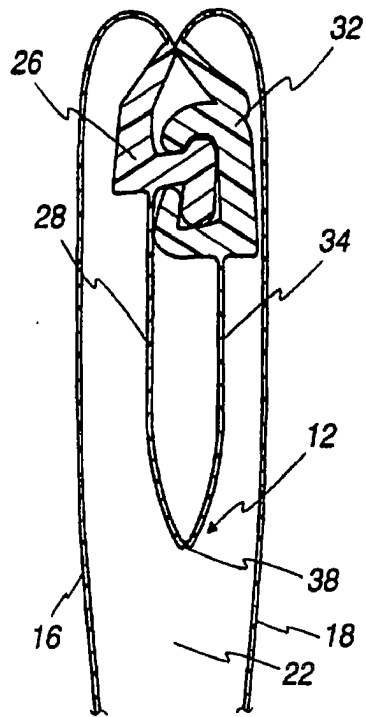
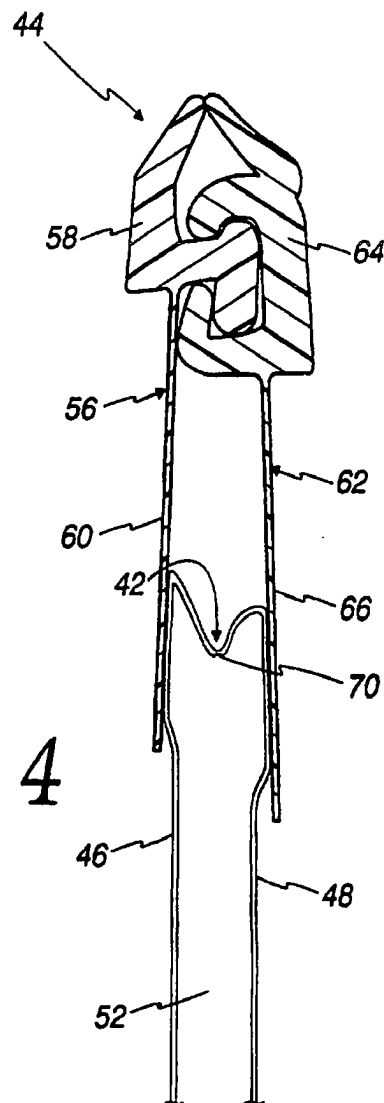
20. The reclosable package of claim 11, wherein said first fin portion is integrally formed with said one of said wall panels and said second fin portion is  
5 integrally formed with said other of said wall panels.

21. The reclosable package of claim 11, wherein said first fin portion is separately extruded from said one of said wall panels and then later attached thereto, and wherein said second fin portion is separately extruded from said other of said wall panels and then later attached thereto.

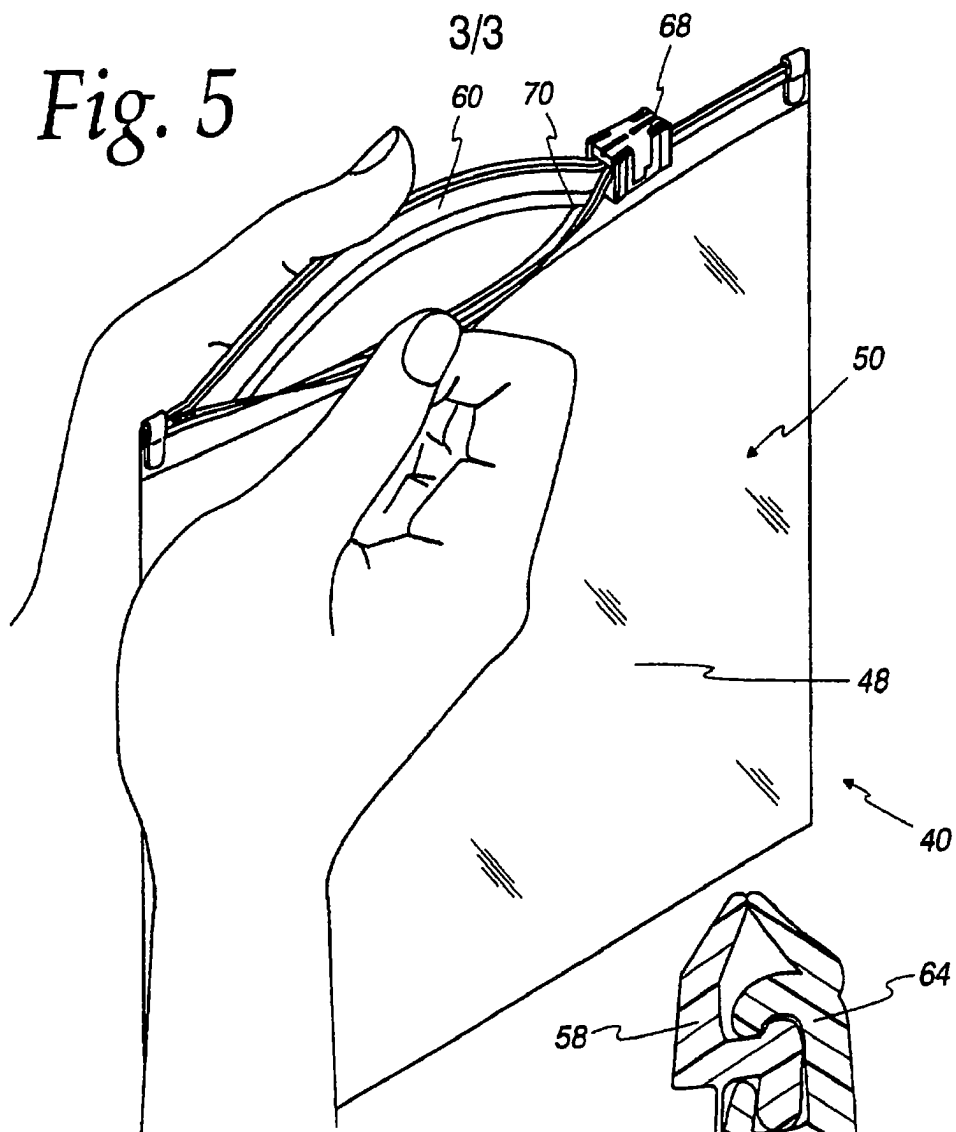
**SUBSTITUTE SHEET (RULE 20)**



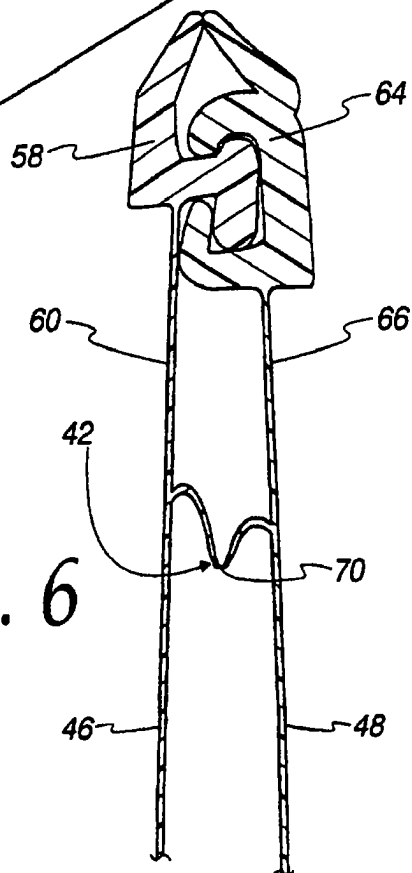
2/3

*Fig. 3**Fig. 4*

*Fig. 5*



*Fig. 6*



## INTERNATIONAL SEARCH REPORT

Inter: nat Application No

PCT/US 97/13845

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 B65D33/25

According to International Patent Classification(IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 546 481 A (FLEXICO-FRANCE) 30 November 1984	1-3,5-7, 9,10
Y	see the whole document ---	4,8
Y	EP 0 621 197 A (ILLINOIS TOOL WORKS) 26 October 1994 see abstract ---	4
Y	US 3 660 875 A (GUTMAN) 9 May 1972 see the whole document ---	8
X	US 4 191 230 A (AUSNIT) 4 March 1980  see the whole document ---	1-3,5-7, 9,10
X	US 3 991 801 A (AUSNIT) 16 November 1976  see the whole document -----	1-3,5-7, 9,10

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&\* document member of the same patent family

Date of the actual completion of the international search

10 November 1997

Date of mailing of the international search report

19.01.98

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 MV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

PERNICE, C

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 97/ 13845

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. CLAIMS 1-10
2. CLAIMS 11-21

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-10

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 97/13845

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2546481 A	30-11-84	BE 899748 A	26-11-84
EP 621197 A	26-10-94	US 5425825 A	20-06-95
		US 5435864 A	25-07-95
US 3660875 A	09-05-72	BE 732213 A	01-10-69
		BE 732214 A	01-10-69
		DE 1921313 A	13-11-69
		DE 1921567 A	13-11-69
		FR 2007251 A	02-01-70
		FR 2007252 A	02-01-70
		GB 1213698 A	25-11-70
		GB 1220989 A	27-01-71
		LU 58499 A	25-07-69
		LU 58504 A	25-07-69
		NL 6906606 A	31-10-69
		NL 6906610 A	31-10-69
		US 3554372 A	12-01-71
US 4191230 A	04-03-80	US 4196030 A	01-04-80
		FR 2417385 A	14-09-79
US 3991801 A	16-11-76	NONE	